

Eligibility Estimation (Bornstein & Indarte, 2022)

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1 Task

This task contains two parts:

- Collect data listed in Bornstein and Indarte (2022) Page 38
- Replicate the measurement construction

2 Data Collection

First, collect a small sample (at the annual level) for understanding the structure of the data. There are four sets of data to be collected

- IRS SOI: ZIP-level individual income tax statistics
- KFF: Medicaid eligibility limits
- ACS: Joint distribution of income and household-size
- KFF: Medicaid expansion date data

2.1 Data Link

This section lists website links to each data mentioned in Bornstein and Indarte (2022).

- IRS SOI
- KFF Eligibility Limit for Adults
- Federal Poverty Level by States
- ACS Joint Distribution of HH Size and Income
- KFF Medicaid Expansion Date

3 Data Sample for Measurement

I begin to replicate the measurement in Bornstein and Indarte (2022) by using a small sample, say 2016, to construct the same variable for understanding. The first is to construct **Income Eligibility Limits by States and Household Structures**. Recall the **Eligibility Measurement** is calculated as

$$P_{tz}(E) = P_{tz}(y \leq c) = \sum_{n=1}^N P_{tz}(y \leq c_{tz}^n | c = c_{tz}^n) \cdot P(c = c_{tz}^n)$$

With a bit of expectation iteration, the result is transformed into

$$P_{tz}(E) = \sum_{n=1}^N P_{tz}(c = c_{tz}^n | y \leq c_{tz}^n) P(y \leq c_{tz}^n) = \sum_{n=1}^N P_{tz}(\tilde{N} = n | y \leq c_{tz}^n) P(y \leq c_{tz}^n)$$

whereas

- the first term $P_{tz}(\tilde{N} = n | y \leq c_{tz}^n)$ is measured by using the national-level joint distribution of household size and income from ACS,
- and the second term $P(y \leq c_{tz}^n)$ is interpolated from Zipcode-level income distribution under known bins from IRS SOI.

- n denotes household size, c_{tz}^n denotes the eligibility limit for household size n in Zipcode location z at year t , y denotes household income.
- $n \in \{1, 2, 2^*, 3, 4, \dots, N\}$

Also to be noted, Bornstein and Indarte (2022) classify the household structure under certain assumptions, such that

- Household size at 2 is classified into two categories: 2 for one-parent-one-dependent, and 2^* for two-adult structure.

To accommodate this assumption, I generate two variables: ***size*** for household size, and ***ind_nodep*** for indicating a no-dependent household structure. In specific,

$$2 \leftrightarrow \text{size} = 2 \quad \& \quad \text{ind_nodep} = 0, \quad 2^* \leftrightarrow \text{size} = 2 \quad \& \quad \text{ind_nodep} = 1$$

3.1 Processing Flow Chart

3.1.1 Federal Poverty Line and Eligibility Limit

I started by generating data files for Federal Poverty Limits and Eligibility Percentages, separately as “**fpl**” and “**epfpl**”. Combining the two datasets, I obtain a state-household size/structure matrix of income eligibility limit, $M(\text{state}, \text{household size}, \text{indicator for no dependent})$. For the year 2016 sample, here is a summary Table 1 for **income eligibility limit (IEL)**.

All						
	Obs	Mean	Median	Std	Min	Max
Eligibility Limit	1071	60665.7	49072.8	42819.4	0	223298.4
By Household Size and Structure						
n (Household Size)	Obs	Mean	Median	Std	Min	Max
1	51	12934.4	20479.2	10227.9	0	31906
2 (<i>ind_nodep</i> = 0)	51	20938.7	27627.6	10056.9	3603.6	44244.2
2* (<i>ind_nodep</i> = 1)	51	17449.0	27627.6	13797.8	0	43043
3	51	26356.2	34776	12658.9	4536	55692
4	51	31773.7	41924.4	15261.0	5468.4	67139.8
5	51	37191.2	49072.8	17863.0	6400.8	78587.6
6	51	42608.6	56221.2	20465.0	7333.2	90035.4
7	51	48026.1	63369.6	23067.1	8265.601	101483.2
8	51	53464.6	70545.6	25679.1	9201.601	112975.2
9	51	57844.8	76286.4	27774.7	9950.4	122168.8
10	51	62225.1	82027.2	29871.4	10699.2	131362.4
11	51	66605.4	87768	31968.8	11448	140556
12	51	70985.7	93508.8	34067.0	12196.8	149749.6
13	51	75366.0	99249.6	36165.8	12945.6	158943.2
14	51	79746.3	104990.4	38265.1	13694.4	168136.8
15	51	84126.6	110731.2	40364.7	14443.2	177330.4
16	51	88506.9	116472	42464.7	15192	186524
17	51	92887.2	122212.8	44565.0	15940.8	195717.6
18	51	97267.5	127953.6	46665.6	16689.6	204911.2
19	51	101647.7	133694.4	48766.4	17438.4	214104.8
20	51	106028.0	139435.2	50867.3	18187.2	223298.4

Table 1: Descriptive Statistics

3.1.2 IRS Tax Return and Gross Income

Then, to the Zip-level IRS data. The IRS reports the number of household within each income bin and has 6 known income bins in total, and they are

- \$0-\$25,000
- \$25,000-\$50,000
- \$50,000-\$75,000
- \$75,000-\$100,000
- \$100,000-\$200,000
- \$200,000 and more

I accessed the ACS data and found the maximum household income is defined at \$99,999,999, which I took as the upper boundary for the last income bin. Thus, the household distribution is constructed as the cumulative distribution on household income, at the Zipcode level.

3.1.3 Combining IRS and FPL/IEL and Interpolation

For computation simplicity, I rounded the **Income Eligibility Limit** to its nearest integer. Then for each Zipcode-level data from IRS, I appended the state-corresponding income eligibility limits. Because most income eligibility limits are lower than the defined least household income threshold, \$25,000, I replace the original number of households with its natural log to avoid the negative cumulative probability in interpolation results.

Also noted, I conducted several interpolation methods: Linear, Cubic, and Spline. In this report, I only report linear interpolation since other methods are not significantly different from linear results.

Therefore, I interpolated the log number of households for each income eligibility limit and later transformed them back. Here are summary statistics Table 2 of the cumulative probability of households by household structures in 2016.

3.1.4 Calculating Probability of Household Sizes Conditional on Income Thresholds

Since the probability of household size conditional on income limit is calculated at the national level (which Bornstein and Indarte assumed household distribution at Zip-level is the same as national level), I simply used the corresponding PUMS 5-year data to count the number of households at required household size conditional on household income less or equal to the income limit. In specific,

$$P_{tz} \left(\tilde{N} = n \mid y \leq c_{tz}^n \right) = \frac{N(\text{HH Income} \leq \text{IEL} \& \text{ HH Number} = n)}{N(\text{HH Income} \leq \text{IEL})}$$

3.1.5 Eligibility Percentage: Summing the Multiplied Terms

The Last part will simply be multiplying two terms over household structures within a given Zipcode level to obtain Eligibility Percentage p_{tz_E} . Here is the summary statistic Table 3 for p_{tz_E} in the year 2016.

3.1.6 Comparison

Here is the result 1 listed in Bornstein and Indarte (2022). The table 3 reports in decimal while the percentage in Figure 1. There are huge differences in the mean and other statistics. Thus, I also calculated the result for the year 2012 as checking whether it is more of a systemic error. The result for the year 2012 is shown in Table 5. As a result, we can clearly see a significant change, at least between 2012 and 2016. Given the fact that the Medicaid expansion is in effect in 2014, I calculated a larger sample, in specific, from 2010 to 2020 to compare the statistics with ones in Bornstein and Indarte (2022). Results are presented in the next section.

n (Household Size)	Obs	Mean	Median	Std	Min	Max
1	29923	0.294	0.283	0.0904	.04	1
2 (<i>ind_nodep</i> = 0)	29923	0.342	0.334	0.0987	.0468624	1
2* (<i>ind_nodep</i> = 1)	29923	0.326	0.318	0.108	.04	1
3	29923	0.384	0.380	0.117	.0483669	1
4	29923	0.433	0.434	0.141	.0499198	1
5	29923	0.488	0.499	0.172	.0515225	1
6	29923	0.523	0.546	0.186	.0531766	1
7	29923	0.555	0.593	0.198	.0548839	1
8	29923	0.590	0.641	0.212	.0566529	1
9	29923	0.615	0.674	0.222	.058109	1
10	29923	0.633	0.700	0.226	.0596026	1
11	29923	0.651	0.727	0.230	.0611346	1
12	29923	0.670	0.753	0.235	.0627059	1
13	29923	0.690	0.781	0.240	.0643176	1
14	29923	0.700	0.794	0.239	.0659708	1
15	29923	0.709	0.806	0.236	.0676664	1
16	29923	0.718	0.816	0.234	.0694057	1
17	29923	0.727	0.827	0.232	.0711896	1
18	29923	0.736	0.837	0.230	.0730194	1
19	29923	0.745	0.848	0.227	.0748962	1
20	29923	0.754	0.859	0.225	.0768213	1
Total	628383	0.585	0.561	0.250	.04	1

Table 2: Cumulative Probability Distribution

	Obs	Mean	Median	Std	Min	Max
ptz_E	29923	0.255	0.313	0.196	.0023513	1.0976

Table 3: Eligibility Percentage in 2016

Table 2: Summary Statistics for ZIP-Level Eligibility and Income Data

	Mean	SD	25th %	50th %	75th %	N
Elig. (%)	17.51	12.06	6.41	12.46	27.82	106,621

Figure 1: Summary Statistics

	Obs	Mean	Median	Std	Min	Max
ptz_E	27769	0.0975	0.0475	0.122	.0061563	.9678289

Table 4: Eligibility Percentage in 2012

4 Full Sample: 2009 - 2020

First, here is the trend of income eligibility limits on the household structure over pre-and post-2014. The limit is increasing with the respect to household size, in general. Following the same cleaning and calculation process, I obtained the statistical results for a sample from 2010 to 2020.

There are some assumptions I made for the years 2010 and 2009 since Medicaid was approved by Congress in the year 2010. Therefore, the Eligibility percentage of FPL for non-parent adults is not recorded in the early year of 2010 and the year 2009. The eligibility structures within these two years differ from those after 2010. In specific, Medicaid switches from a "Jobless and working parent" structure to a "parent w/. dependent and w/o. dependent" one. For measuring consistency, I used the year 2011 to proxy them since the eligibility limits are monotonically non-decreasing over years.

The second assumption is made for the count of households at household income equal to zero or less. I impose that

$$F_{HH}(Income \leq 0) = 0$$

to define the left boundary of the household cumulative distribution over household income.

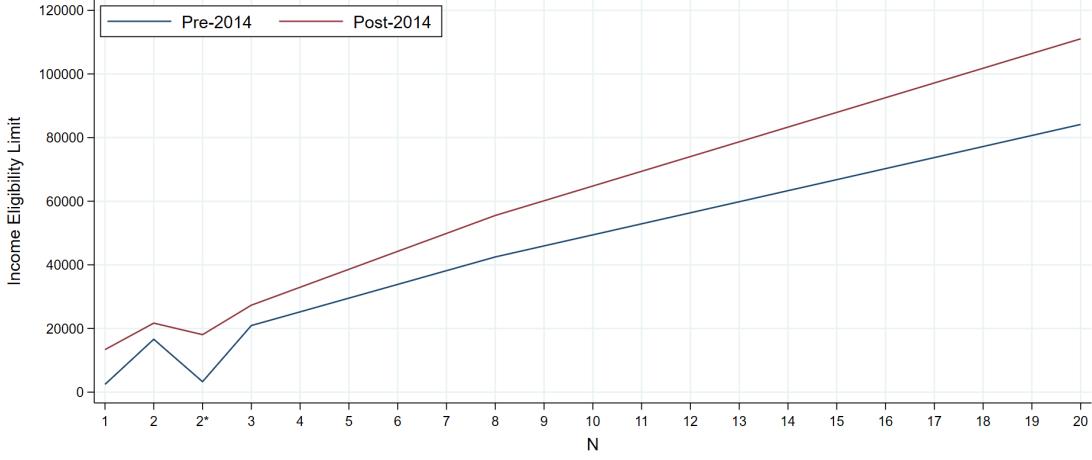


Figure 2: Mean Income Eligibility Limit Trend

	Obs	Mean	Median	Std	Min	Max
ptz_E	334982	0.168	0.0756	0.169	.0003892	.9904149

Table 5: Eligibility Percentage for 2010 to 2020

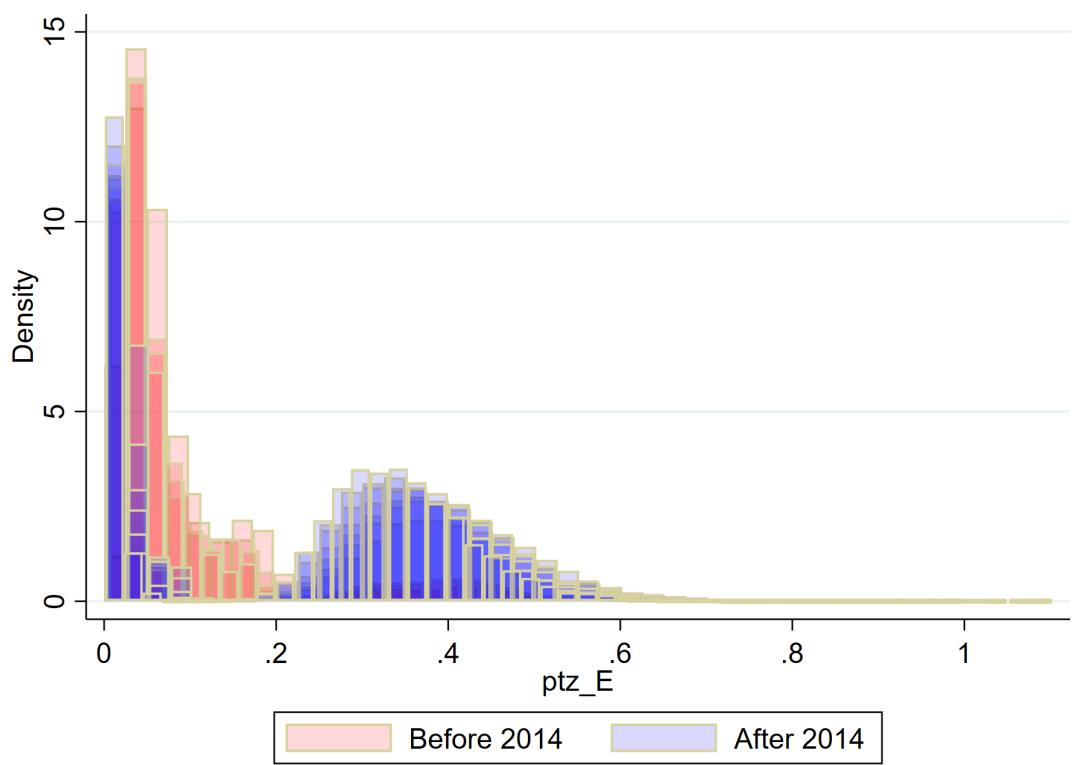


Figure 3: Histogram

5 Simple Regression

5.1 Zip Level

As instructed, there will be six regressions interested (denote Eligibility Percentage as E.Pct.):

- $\ln(\text{weighted-average AGI})_{z,t+1} = \text{E.Pct.}_{z,t} + \text{Year Fixed Effect}_t + \text{Zip Fixed Effect}_z + \epsilon_{z,t}$
- $\ln(\text{weighted-average Wage})_{z,t+1} = \text{E.Pct.}_{z,t} + \text{Year Fixed Effect}_t + \text{Zip Fixed Effect}_z + \epsilon_{z,t}$
- $\text{Cum.Pct. of HH (Income } \leq 25,000\text{)}_{z,t+1} = \text{E.Pct.}_{z,t} + \text{Year Fixed Effect}_t + \text{Zip Fixed Effect}_z + \epsilon_{z,t}$
- $\text{Cum.Pct. of HH (Income } \leq 50,000\text{)}_{z,t+1} = \text{E.Pct.}_{z,t} + \text{Year Fixed Effect}_t + \text{Zip Fixed Effect}_z + \epsilon_{z,t}$
- $\text{Cum.Pct. of HH (Income } \geq 200,000\text{)}_{z,t+1} = \text{E.Pct.}_{z,t} + \text{Year Fixed Effect}_t + \text{Zip Fixed Effect}_z + \epsilon_{z,t}$
- $\ln(\text{Total Household})_{z,t+1} = \text{E.Pct.}_{z,t} + \text{Year Fixed Effect}_t + \text{Zip Fixed Effect}_z + \epsilon_{z,t}$

The fixed-effect regression from *reghdfe* is written as,

```
reghdfe f.var ptz_E, absorb(year zip) vce(cl year zip)
```

where **var** is the variables of interest. Table 6 reports the regression for

$$\text{Average AGI}_{t+1} = \text{E.Pct.}_{z,t} + \text{Year Fixed Effect}_t + \text{Zip Fixed Effect}_z + \epsilon_{z,t}$$

$$\text{Average Wage}_{t+1} = \text{E.Pct.}_{z,t} + \text{Year Fixed Effect}_t + \text{Zip Fixed Effect}_z + \epsilon_{z,t}$$

$$\text{Average Unempl. Benefit}_{t+1} = \text{E.Pct.}_{z,t} + \text{Year Fixed Effect}_t + \text{Zip Fixed Effect}_z + \epsilon_{z,t}$$

The Table 6 - 11 below show the results of regression for

- 1) Eligibility Percentage,
- 2) Pre / Post Eligibility Average,
- 3) Medicaid Expansion Year Dummy.

The summary statistics for each variable are presented in Table 12. The coefficient plot of the forward and lagged variables is exhibited in Figure 4.

	(1) AGI/Total HH	(2) Wage/Total HH	(3) Unemp. Benefit/Total HH
Eligibility Percentage	-6.072*** (1.867)	-2.980*** (0.879)	-0.003 (0.016)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 6: Regression on Eligibility Percentage

	(1) AGI/Total HH	(2) Wage/Total HH	(3) Unemp. Benefit/Total HH
Pre/Post Eligibility Average	-6.891*** (1.963)	-3.441*** (0.856)	0.001 (0.021)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 7: Regression on Pre/Post Eligibility Average

	(1) AGI/Total HH	(2) Wage/Total HH	(3) Unemp. Benefit/Total HH
Medicaid Expansion Year Dummy	1.382*** (0.323)	1.031*** (0.211)	0.003 (0.008)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 8: Regression on Medicaid Expansion Year Dummy

	(1)	(2)	(3)	(4)
Cum. Pct. of HH < 25,000	Cum. Pct. of HH < 50,000	Cum. Pct. of HH > 200,000	ln(Total HH)	
Eligibility Percentage	0.004 (0.003)	0.012*** (0.003)	-0.008*** (0.002)	-0.053*** (0.013)
Zip + Year Fixed Effect	Yes	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year	Zip + Year

Table 9: Regression on Eligibility Percentage

	(1)	(2)	(3)	(4)
Cum. Pct. of HH < 25,000	Cum. Pct. of HH < 50,000	Cum. Pct. of HH > 200,000	ln(Total HH)	
Pre/Post Eligibility Avg.	0.002 (0.003)	0.011*** (0.003)	-0.009*** (0.002)	-0.064*** (0.014)
Zip + Year Fixed Effect	Yes	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year	Zip + Year

Table 10: Regression on Pre/Post Eligibility Average

	(1)	(2)	(3)	(4)
Cum. Pct. of HH < 25,000	Cum. Pct. of HH < 50,000	Cum. Pct. of HH > 200,000	ln(Total HH)	
Med. Exp. Year Dummy	0.001 (0.001)	-0.000 (0.001)	0.003*** (0.001)	-0.010** (0.004)
Zip + Year Fixed Effect	Yes	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year	Zip + Year

Table 11: Regression on Medicaid Expansion Year Dummy

	Mean	S.D.	Min	P1	P5	P10	P25	P50	P75	P90	P95	P99	Max
Eligibility Pct.	0.168	0.169	0.000389	0.00274	0.00486	0.00756	0.0162	0.0756	0.324	0.408	0.455	0.554	0.990
Pre/Post Eligibility Avg.	0.168	0.166	0.000477	0.00483	0.00641	0.00863	0.0189	0.0810	0.323	0.403	0.448	0.544	0.965
Med.Exp. Year Dummy	0.353	0.478	0	0	0	0	0	0	1	1	1	1	1
agi_avg	60.74	48.88	3.881	25.92	32.37	35.84	42.04	50.57	63.98	88.45	116.6	235.5	5253.6
wage_avg	49.67	27.33	0	23.77	28.88	31.70	36.57	43.00	53.26	71.94	91.36	159.2	1129.7
unemp_avg	0.0684	0.0608	0	0	0	0	0.0240	0.0556	0.0988	0.148	0.185	0.270	0.650
hh_cumpct_1	0.379	0.0935	0	0.198	0.242	0.267	0.313	0.372	0.435	0.500	0.542	0.640	1
hh_cumpct_2	0.628	0.124	0	0.328	0.412	0.464	0.550	0.634	0.709	0.778	0.823	0.916	1
hh_cumpct_6	0.0270	0.0506	0	0	0	0	0.00866	0.0303	0.0745	0.124	0.260	0.667	
total.hh_ln	7.581	1.527	3.689	4.700	5.136	5.481	6.346	7.539	8.929	9.632	9.898	10.30	12.99
Observations	334982												

Table 12: Summary Statistics

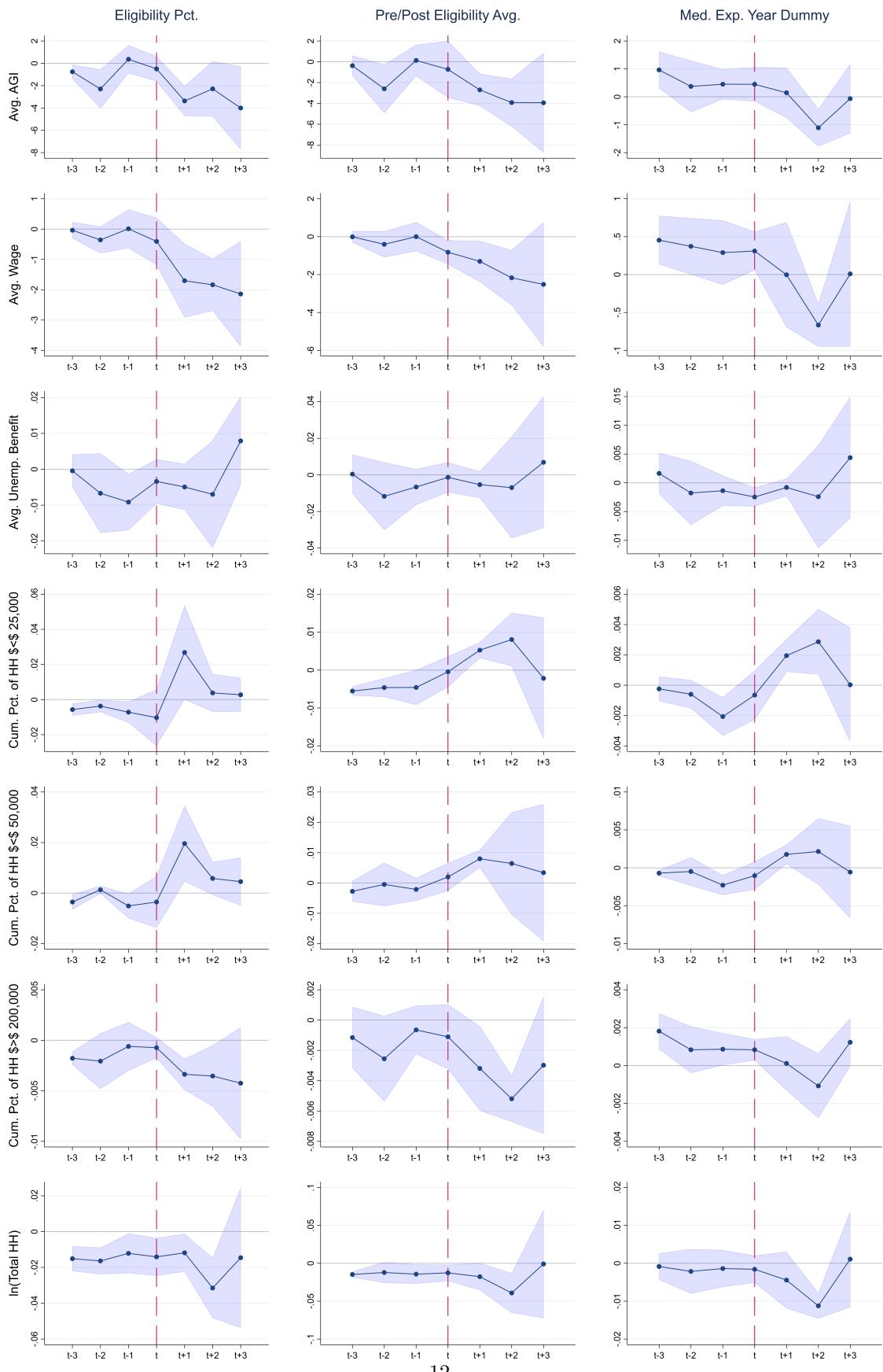


Figure 4: Coefficient Plot

5.2 State Level

This section reports the summary statistics for variables and regression results at the state level.

$\ln(\# \text{ of HH w/. Income})$	Mean	Std	Min	P1	P5	P10	P25	Median	P75	P90	P95	P99	Max
Income $\leq \$25,000$	13.35	1.052	11.29	11.34	11.54	11.81	12.50	13.53	14.00	14.62	15.18	15.63	15.71
$\$25,000 \leq \text{Income} \leq \$50,000$	12.95	1.014	10.94	11.02	11.29	11.52	12.11	13.05	13.61	14.17	14.68	15.19	15.34
$\$50,000 \leq \text{Income} \leq \$75,000$	12.41	0.996	10.56	10.62	10.81	10.97	11.59	12.44	13.12	13.66	14.08	14.61	14.78
$\$75,000 \leq \text{Income} \leq \$100,000$	11.96	0.991	10.13	10.20	10.36	10.56	11.14	12.00	12.66	13.23	13.60	14.16	14.33
$\$100,000 \leq \text{Income} \leq \$200,000$	12.22	1.053	10.12	10.23	10.61	10.83	11.32	12.27	13.04	13.53	13.95	14.61	14.83
Income $\geq \$200,000$	11.01	1.209	8.457	8.729	9.185	9.466	10.04	10.97	11.95	12.62	13.04	13.79	14.25
Observations	612												

Table 13: Summary Statistics

	Mean	Std	Min	P1	P5	P10	P25	Median	P75	P90	P95	P99	Max
Avg. AGI	65.21	12.68	41.78	46.12	48.41	50.81	55.76	62.93	72.22	82.63	90.93	102.4	115.5
Avg. Wage	53.44	9.657	36.52	39.07	41.43	42.89	46.21	51.79	58.33	66.99	72.95	81.29	91.12
Avg. Unemp. Benefit	0.0687	0.0511	0.00912	0.0122	0.0172	0.0224	0.0335	0.0545	0.0889	0.132	0.175	0.255	0.325
In(Total HH)	14.37	1.024	12.38	12.52	12.69	12.83	13.50	14.45	15.04	15.62	16.08	16.66	16.75
Cum. Pct. of HH < 25,000	0.365	0.0493	0.237	0.256	0.286	0.300	0.328	0.365	0.400	0.430	0.450	0.464	0.499
Cum. Pct. of HH < 50,000	0.609	0.0544	0.448	0.487	0.517	0.539	0.568	0.612	0.650	0.677	0.695	0.717	0.744
Cum. Pct. of HH > 200,000	0.0383	0.0173	0.0120	0.0145	0.0179	0.0203	0.0255	0.0344	0.0461	0.0613	0.0741	0.0910	0.1112
Observations	612												

Table 14: Summary Statistics (Continue)

Here are the regression results for

$$\text{Dep. Var.}_{t+1} = \text{Post_Dummy}_{s,t} + \text{Year Fixed Effect}_t + \text{State Fixed Effect}_s + \epsilon_{s,t}$$

Table 15: Regression on Expansion Year Dummy

	(1) Avg. AGI	(2) Avg. Wage	(3) Avg. Unemp. Benefit
Med. Exp. Year Dummy	0.551 (0.748)	0.759 (0.474)	0.002 (0.008)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 16: Regression on Medicaid Expansion Year Dummy

	(1) Cum. Pct. of HH < 25,000	(2) Cum. Pct. of HH < 50,000
Med. Exp. Year Dummy	0.003 (0.002)	0.001 (0.002)
Zip + Year Fixed Effect	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year

Table 17: Regression on Medicaid Expansion Year Dummy

	(1) Cum. Pct. of HH > 200,000	(2) ln(Total HH)
Med. Exp. Year Dummy	0.003* (0.001)	-0.004 (0.011)
Zip + Year Fixed Effect	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year

Table 18: Regression on Medicaid Expansion Year Dummy

	(1) ln(Bin 1)	(2) ln(Bin 2)	(3) ln(Bin 3)	(4) ln(Bin 4)	(5) ln(Bin 5)	(6) ln(Bin6)
Med. Exp. Year Dummy	-0.008 (0.011)	-0.012 (0.010)	-0.010 (0.013)	-0.021 (0.015)	-0.046* (0.021)	-0.017 (0.026)
Zip + Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year				

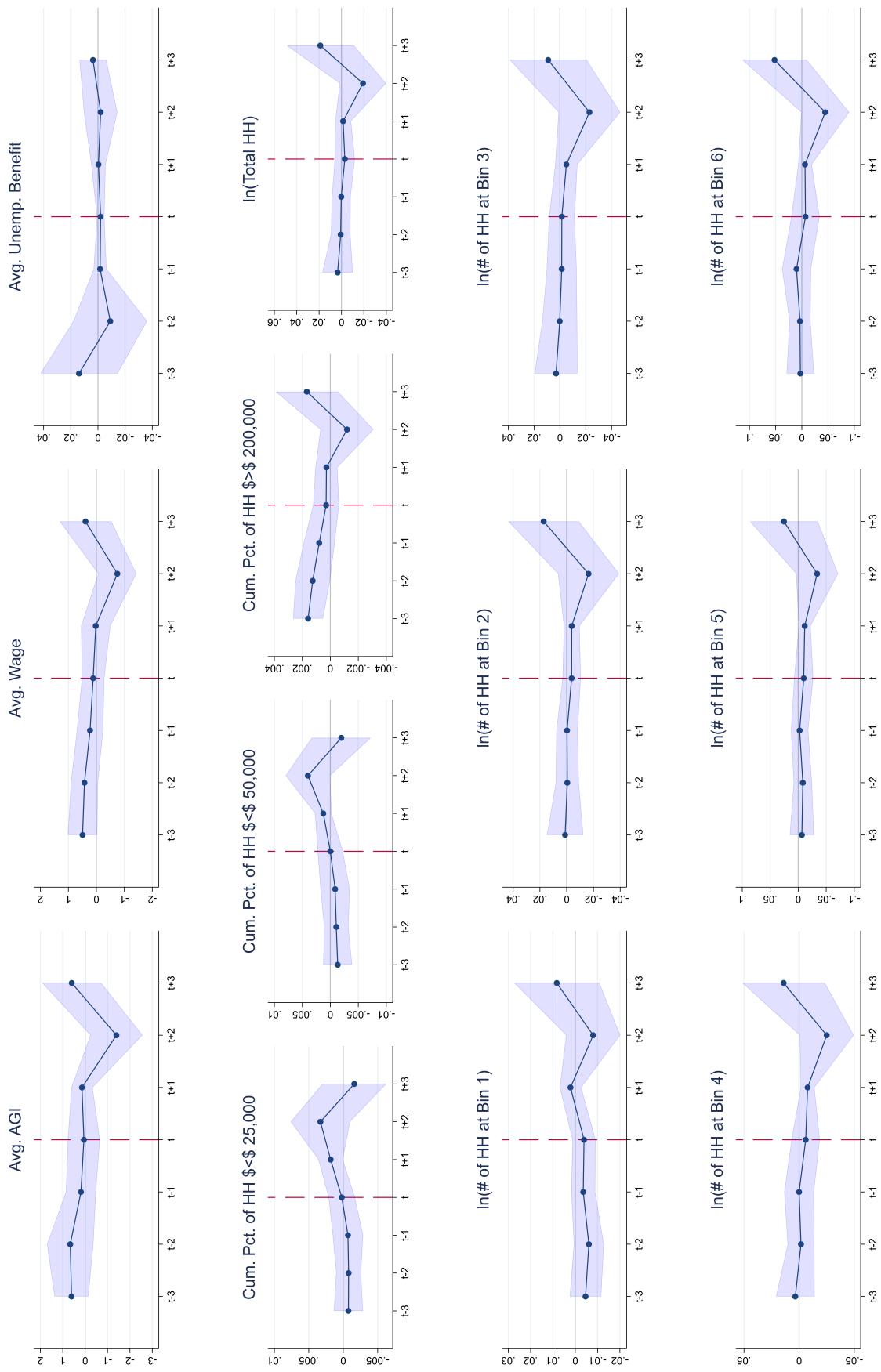


Table 19: $\ln(\# \text{ of HH})$ Each Bin on Medicaid Expansion Year Dummy

	(1) $\ln(\# \text{ of HH at Bin 1})$	(2) $\ln(\# \text{ of HH at Bin 2})$	(3) $\ln(\# \text{ of HH at Bin 3})$
t-3	-0.00458 (0.00273)	0.00120 (0.00528)	0.00304 (0.00647)
t-2	-0.00609* (0.00261)	-0.00045 (0.00334)	0.00018 (0.00525)
t-1	-0.00357 (0.00209)	-0.00026 (0.00310)	-0.00136 (0.00449)
t	-0.00393 (0.00201)	-0.00368 (0.00264)	-0.00144 (0.00384)
t+1	0.00213 (0.00187)	-0.00375 (0.00227)	-0.00495 (0.00336)
t+2	-0.00802 (0.00472)	-0.01630 (0.00886)	-0.02281* (0.00929)
t+3	0.00829 (0.00744)	0.01723 (0.01026)	0.00910 (0.01162)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

 Table 20: $\ln(\# \text{ of HH})$ Each Bin on Medicaid Expansion Year Dummy (Continue)

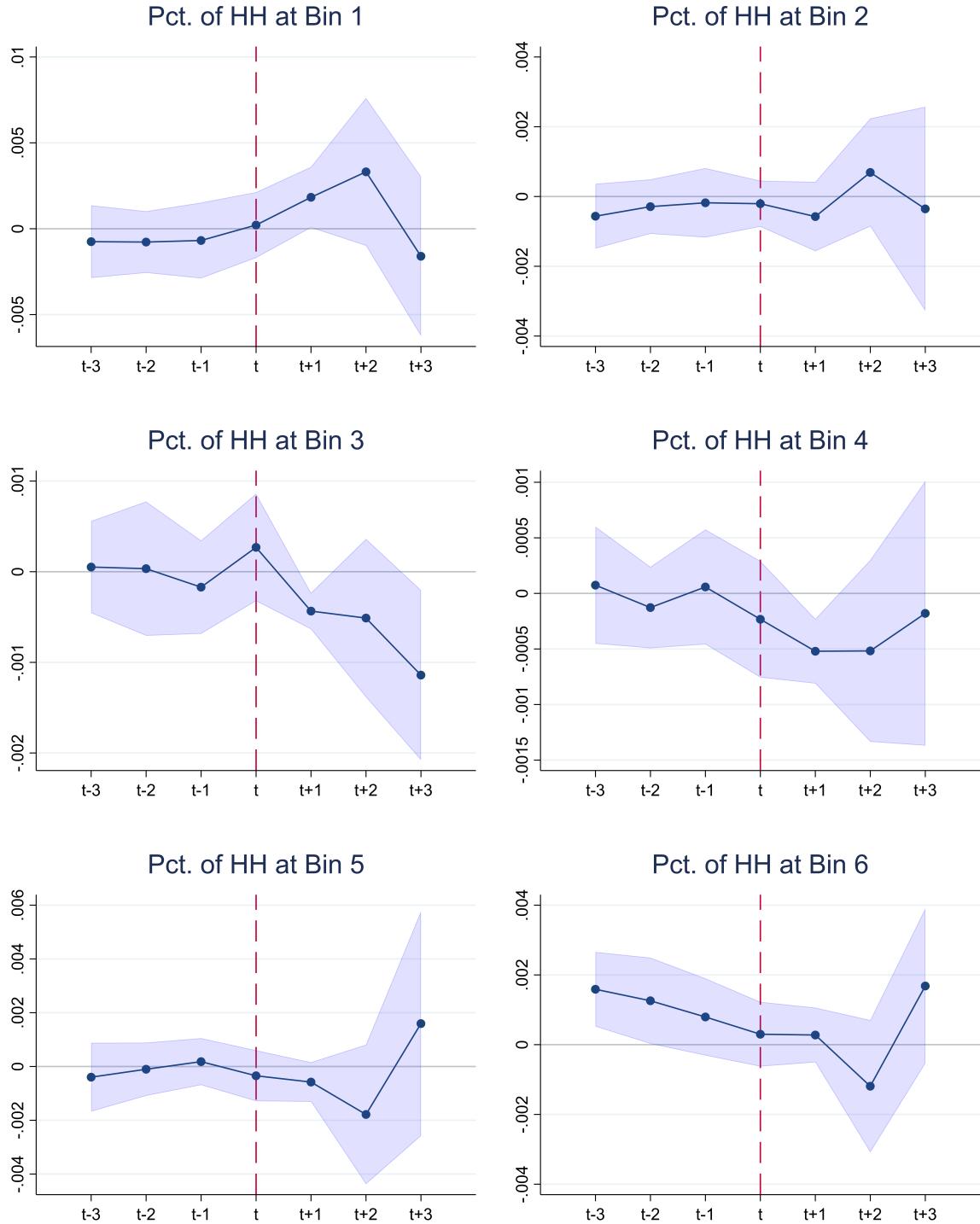
	(1) $\ln(\# \text{ of HH at Bin 4})$	(2) $\ln(\# \text{ of HH at Bin 5})$	(3) $\ln(\# \text{ of HH at Bin 6})$
t-3	0.00345 (0.00679)	-0.00651 (0.00842)	0.00285 (0.01019)
t-2	-0.00172 (0.00471)	-0.00822 (0.00634)	0.00354 (0.00780)
t-1	0.00001 (0.00523)	-0.00250 (0.00597)	0.01009 (0.01073)
t	-0.00598 (0.00497)	-0.00977 (0.00661)	-0.00690 (0.01047)
t+1	-0.00769** (0.00241)	-0.01156** (0.00410)	-0.00609 (0.00502)
t+2	-0.02504** (0.00953)	-0.03367* (0.01456)	-0.04461* (0.01777)
t+3	0.01409 (0.01459)	0.02561 (0.02361)	0.05213* (0.02397)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 21: Pct. HH Regression on Medicaid Expansion Year Dummy

	(1) Pct. of HH at Bin 1	(2) Pct. of HH at Bin 2	(3) Pct. of HH at Bin 3
t-3	-0.00075 (0.00082)	-0.00056 (0.00036)	0.00005 (0.00020)
t-2	-0.00077 (0.00070)	-0.00029 (0.00030)	0.00003 (0.00029)
t-1	-0.00068 (0.00086)	-0.00018 (0.00039)	-0.00017 (0.00020)
t	0.00021 (0.00074)	-0.00021 (0.00026)	0.00027 (0.00023)
t+1	0.00183** (0.00069)	-0.00057 (0.00039)	-0.00043*** (0.00008)
t+2	0.00331 (0.00167)	0.00069 (0.00060)	-0.00051 (0.00034)
t+3	-0.00160 (0.00181)	-0.00035 (0.00114)	-0.00114** (0.00036)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 22: Pct. HH Regression on Medicaid Expansion Year Dummy (Continue)

	(1) Pct. of HH at Bin 4	(2) Pct. of HH at Bin 5	(3) Pct. of HH at Bin 6
t-3	0.00007 (0.00020)	-0.00040 (0.00050)	0.00159** (0.00042)
t-2	-0.00013 (0.00014)	-0.00010 (0.00038)	0.00126** (0.00048)
t-1	0.00006 (0.00020)	0.00018 (0.00034)	0.00080 (0.00043)
t	-0.00023 (0.00020)	-0.00034 (0.00037)	0.00030 (0.00036)
t+1	-0.00052*** (0.00011)	-0.00058* (0.00029)	0.00028 (0.00030)
t+2	-0.00052 (0.00032)	-0.00178 (0.00101)	-0.00119 (0.00074)
t+3	-0.00018 (0.00046)	0.00159 (0.00163)	0.00168 (0.00087)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year



5.3 Back to Zip But Aweighted by Total HH

Table 23: Regress on Eligibility Pct.

	(1)	(2)	(3)
	Avg. AGI	Avg. Wage	Avg. Unemp. Benefit
t-3	-0.41851 (0.35770)	0.33225 (0.39659)	-0.00111 (0.00106)
t-2	-4.26656** (1.14305)	-0.89717 (0.52769)	-0.00076 (0.00201)
t-1	1.00678 (1.06959)	0.37775 (0.42629)	-0.00841** (0.00242)
t	-0.82509 (0.86146)	-0.57391 (0.36525)	-0.00657*** (0.00113)
t+1	-3.54800*** (0.84249)	-1.69296* (0.67301)	-0.00392** (0.00145)
t+2	-3.61326* (1.54523)	-2.97300*** (0.73382)	-0.00512 (0.00487)
t+3	-4.20465 (2.14353)	-2.28917 (1.19720)	0.01382** (0.00411)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 24: Regress on Eligibility Pct. (Continue)

	(1)	(2)	(3)
	Cum. Pct. of HH < 25k	Cum. Pct. of HH < 50k	Cum. Pct. of HH > 200k
t-3	-0.01293*** (0.00315)	-0.00681** (0.00202)	-0.00158** (0.00057)
t-2	-0.00718 (0.00438)	-0.00071 (0.00241)	-0.00297** (0.00110)
t-1	-0.01251*** (0.00280)	-0.00652** (0.00223)	-0.00013 (0.00098)
t	-0.00624* (0.00256)	-0.00122 (0.00180)	-0.00172* (0.00068)
t+1	0.00866 (0.00495)	0.00962* (0.00384)	-0.00408** (0.00110)
t+2	0.01328** (0.00480)	0.01296** (0.00420)	-0.00574*** (0.00130)
t+3	0.01324** (0.00461)	0.01240* (0.00604)	-0.00302 (0.00309)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 25: Regress on Eligibility Pct. (Continue)

	(1) ln(Total HH)	(2) ln(# of HH at Bin 1)	(3) ln(# of HH at Bin 2)
t-3	-0.01455*** (0.00336)	-0.04660*** (0.00956)	0.00874** (0.00217)
t-2	-0.02108*** (0.00480)	-0.03675** (0.01148)	0.00464 (0.00880)
t-1	-0.01248 (0.00997)	-0.04074*** (0.00915)	0.00878 (0.01029)
t	-0.01642* (0.00705)	-0.02620** (0.00863)	0.00443 (0.00735)
t+1	-0.01162 (0.00853)	0.01803 (0.01220)	-0.00495 (0.01008)
t+2	-0.05181*** (0.01049)	-0.00816 (0.01131)	-0.04810** (0.01268)
t+3	-0.01395 (0.02211)	0.01807 (0.01090)	-0.01280 (0.01930)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 26: Regress on Eligibility Pct. (Continue)

	(1) ln(# of HH at Bin 3)	(2) ln(# of HH at Bin 4)	(3) ln(# of HH at Bin 5)	(4) ln(# of HH at Bin 6)
t-3	0.01554* (0.00631)	0.03056** (0.00990)	0.02946*** (0.00331)	0.03970** (0.01141)
t-2	-0.00330 (0.01235)	0.00549 (0.01294)	-0.00954 (0.00706)	-0.01980 (0.01929)
t-1	0.00195 (0.01367)	0.01184 (0.01490)	0.03052 (0.01796)	0.05388* (0.02419)
t	-0.00456 (0.00878)	0.01154 (0.01122)	0.00253 (0.01155)	0.01625 (0.01476)
t+1	-0.02646 (0.01735)	-0.02392 (0.02189)	-0.02354 (0.01729)	-0.04005 (0.04270)
t+2	-0.07962*** (0.01389)	-0.08029** (0.02132)	-0.07594** (0.02496)	-0.16231*** (0.03375)
t+3	-0.05799** (0.01934)	-0.05222 (0.02778)	-0.06776 (0.04437)	-0.11947 (0.07658)
Zip + Year Fixed Effect	Yes	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year	Zip + Year

Table 27: Regress on Avg. Eligibility Pct.

	(1)	(2)	(3)
	Avg. AGI	Avg. Wage	Avg. Unemp. Benefit
t-3	0.23690 (0.70822)	0.59775 (0.53934)	0.00170 (0.00373)
t-2	-4.52675* (2.00995)	-0.87410 (0.84755)	-0.00558 (0.00552)
t-1	0.73098 (1.23255)	0.33971 (0.44817)	-0.00557** (0.00190)
t	-0.68403 (1.69472)	-0.73443 (0.55641)	-0.00578** (0.00170)
t+1	-3.45884** (1.26235)	-1.65423 (0.83106)	-0.00428* (0.00172)
t+2	-5.86159*** (0.75150)	-3.35356*** (0.25378)	-0.00389 (0.00915)
t+3	-5.23221* (2.07526)	-2.77524 (1.40179)	0.01170 (0.01315)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 28: Regress on Avg. Eligibility Pct. (Continue)

	(1)	(2)	(3)
	Cum. Pct. of HH < 25k	Cum. Pct. of HH < 50k	Cum. Pct. of HH > 200k
t-3	-0.01369*** (0.00280)	-0.00796*** (0.00164)	-0.00064 (0.00153)
t-2	-0.00913* (0.00365)	-0.00240 (0.00294)	-0.00338 (0.00233)
t-1	-0.01225*** (0.00216)	-0.00550* (0.00236)	-0.00056 (0.00110)
t	-0.00565 (0.00353)	-0.00019 (0.00259)	-0.00196 (0.00138)
t+1	0.00329 (0.00397)	0.00631 (0.00390)	-0.00411* (0.00194)
t+2	0.01169** (0.00303)	0.01202*** (0.00274)	-0.00770*** (0.00122)
t+3	0.00075 (0.00754)	0.00520 (0.00798)	-0.00349 (0.00202)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 29: Regress on Avg. Eligibility Pct. (Continue)

	(1) ln(Total HH)	(2) ln(# of HH at Bin 1)	(3) ln(# of HH at Bin 2)
t-3	-0.01298** (0.00429)	-0.04602*** (0.00566)	0.00780 (0.00734)
t-2	-0.01574* (0.00737)	-0.03418*** (0.00820)	0.01109 (0.00770)
t-1	-0.01219 (0.01320)	-0.03756** (0.01228)	0.01229 (0.01124)
t	-0.01776* (0.00825)	-0.02557* (0.01056)	0.00498 (0.00928)
t+1	-0.01578 (0.01446)	0.00022 (0.00356)	-0.00100 (0.01354)
t+2	-0.06086*** (0.01109)	-0.02138** (0.00749)	-0.05490*** (0.01285)
t+3	-0.00646 (0.03607)	0.00284 (0.01938)	0.01545 (0.03414)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 30: Regress on Avg. Eligibility Pct. (Continue)

	(1) ln(# of HH at Bin 3)	(2) ln(# of HH at Bin 4)	(3) ln(# of HH at Bin 5)	(4) ln(# of HH at Bin 6)
t-3	0.01981* (0.00976)	0.04151** (0.01042)	0.03354*** (0.00411)	0.05920** (0.02254)
t-2	0.00728 (0.01391)	0.01850 (0.01443)	0.00958 (0.01321)	0.00887 (0.04252)
t-1	0.00506 (0.01747)	0.01330 (0.02026)	0.02886 (0.01860)	0.04475 (0.03706)
t	-0.00512 (0.01180)	0.00805 (0.01465)	-0.00460 (0.01195)	0.00482 (0.02768)
t+1	-0.02168 (0.02394)	-0.01546 (0.02927)	-0.00891 (0.02222)	-0.01213 (0.06347)
t+2	-0.07696*** (0.01325)	-0.07114** (0.02130)	-0.07609* (0.03522)	-0.20408*** (0.01968)
t+3	-0.01766 (0.03622)	-0.00714 (0.04936)	0.00088 (0.08067)	0.02740 (0.11918)
Zip + Year Fixed Effect	Yes	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year	Zip + Year

Table 31: Regress on Med. Exp. Year Dummy

	(1)	(2)	(3)
	Avg. AGI	Avg. Wage	Avg. Unemp. Benefit
t-3	1.32638** (0.37193)	0.80934** (0.25132)	0.00199 (0.00114)
t-2	0.27717 (0.59491)	0.53911 (0.30881)	-0.00071 (0.00164)
t-1	0.50309 (0.30077)	0.47142* (0.18742)	-0.00169* (0.00070)
t	0.67662* (0.32741)	0.50284** (0.14554)	-0.00343*** (0.00037)
t+1	0.34419 (0.55875)	0.14822 (0.38298)	-0.00124** (0.00043)
t+2	-1.71750*** (0.34245)	-0.94686*** (0.18291)	-0.00068 (0.00281)
t+3	0.19119 (0.66399)	0.32037 (0.41461)	0.00381 (0.00375)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 32: Regress on Med. Exp. Year Dummy (Continue)

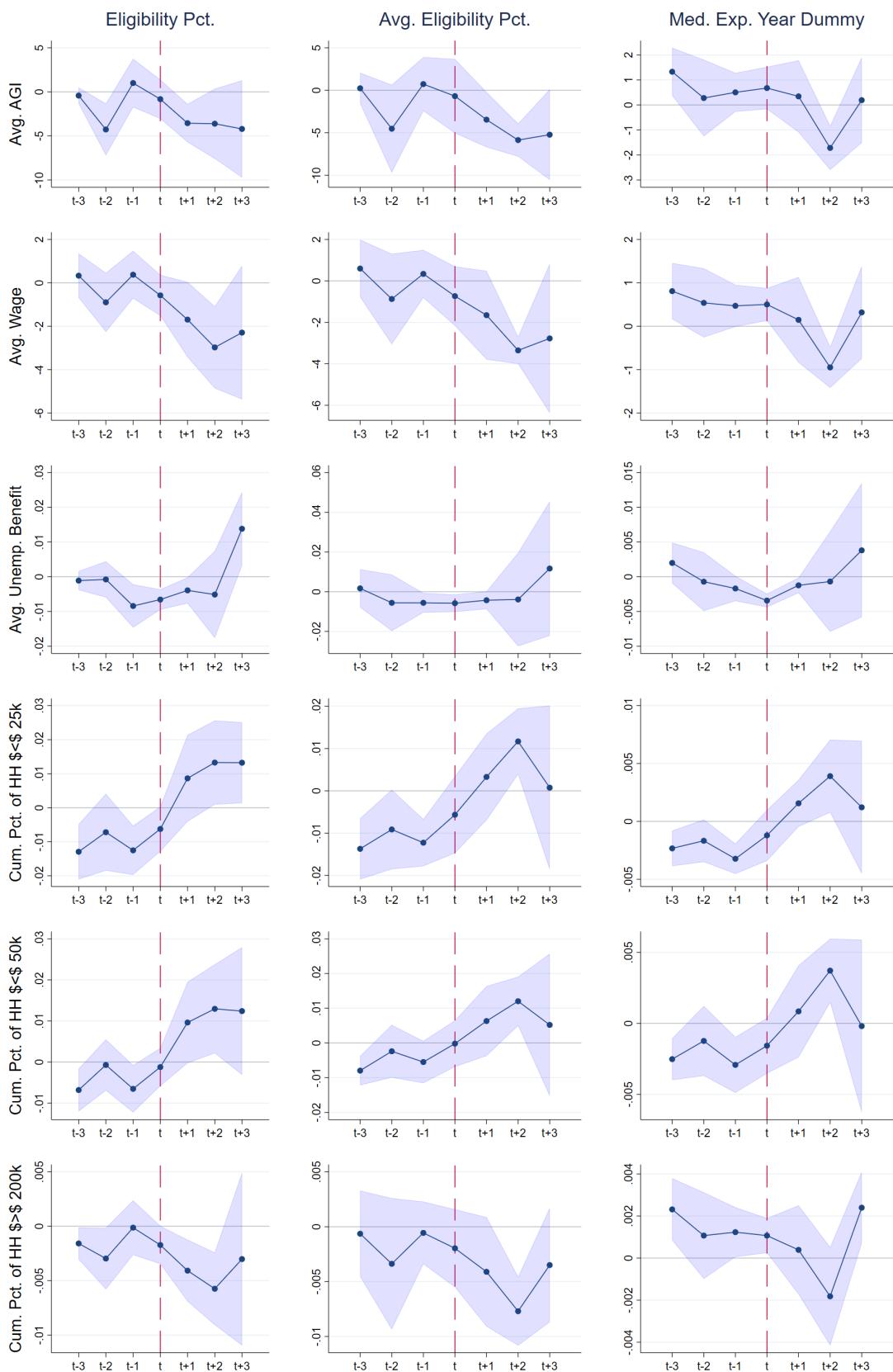
	(1)	(2)	(3)
	Cum. Pct. of HH < 25k	Cum. Pct. of HH < 50k	Cum. Pct. of HH > 200k
t-3	-0.00233** (0.00059)	-0.00252*** (0.00057)	0.00232*** (0.00057)
t-2	-0.00167* (0.00071)	-0.00124 (0.00096)	0.00107 (0.00080)
t-1	-0.00323*** (0.00051)	-0.00292** (0.00076)	0.00123** (0.00046)
t	-0.00121 (0.00085)	-0.00157* (0.00076)	0.00107** (0.00032)
t+1	0.00157 (0.00079)	0.00085 (0.00126)	0.00039 (0.00082)
t+2	0.00391** (0.00122)	0.00372*** (0.00087)	-0.00182 (0.00091)
t+3	0.00122 (0.00223)	-0.00019 (0.00237)	0.00240** (0.00066)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

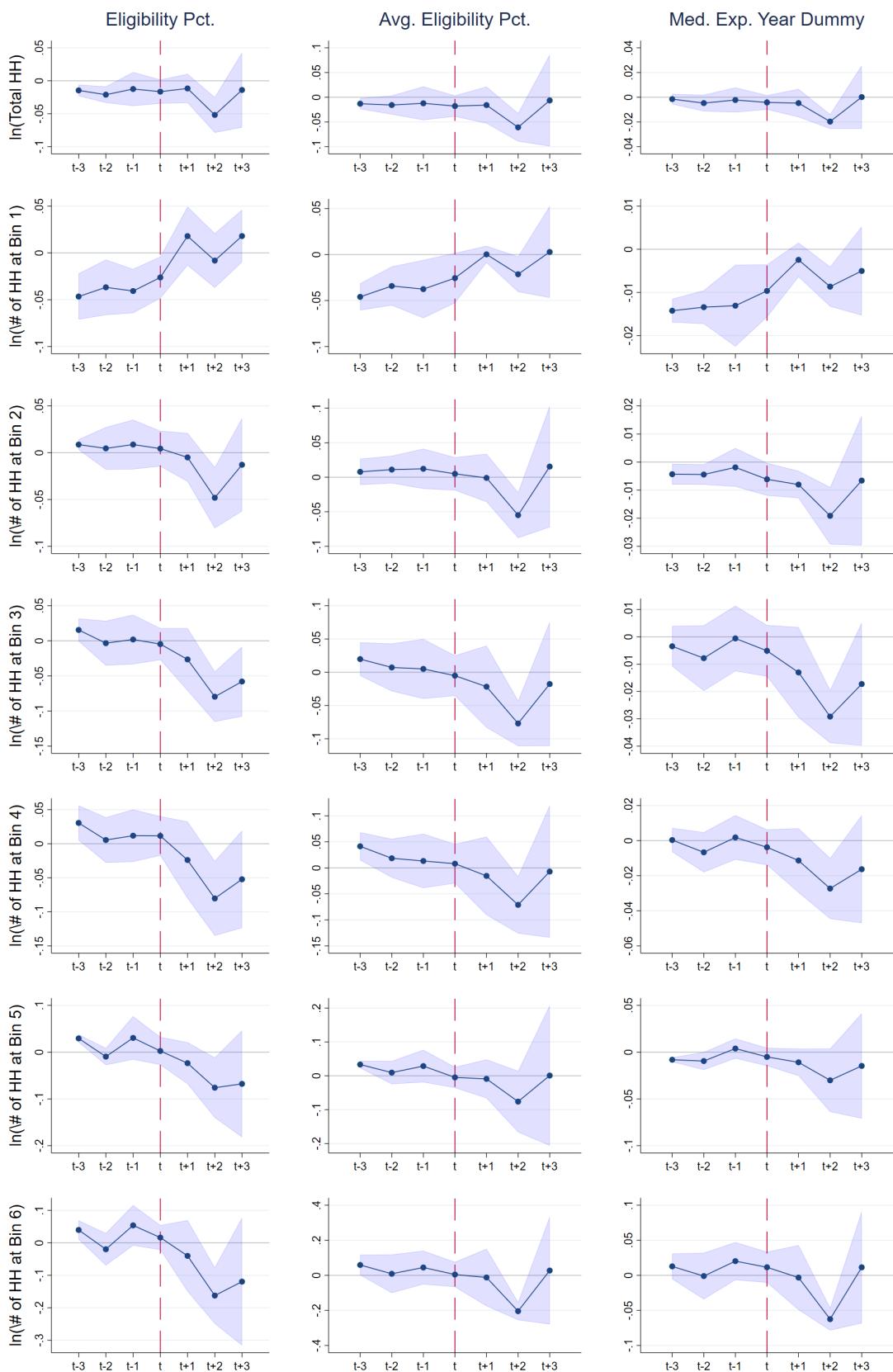
Table 33: Regress on Med. Exp. Year Dummy (Continue)

	(1) ln(Total HH)	(2) ln(# of HH at Bin 1)	(3) ln(# of HH at Bin 2)
t-3	-0.00147 (0.00162)	-0.01424*** (0.00106)	-0.00430** (0.00143)
t-2	-0.00470 (0.00257)	-0.01341*** (0.00151)	-0.00442** (0.00140)
t-1	-0.00219 (0.00390)	-0.01307** (0.00368)	-0.00188 (0.00267)
t	-0.00417 (0.00225)	-0.00964*** (0.00237)	-0.00612** (0.00226)
t+1	-0.00471 (0.00442)	-0.00246 (0.00154)	-0.00800*** (0.00188)
t+2	-0.01965*** (0.00228)	-0.00866*** (0.00179)	-0.01912*** (0.00396)
t+3	0.00016 (0.00995)	-0.00501 (0.00400)	-0.00657 (0.00898)
Zip + Year Fixed Effect	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year

Table 34: Regress on Med. Exp. Year Dummy (Continue)

	(1) ln(# of HH at Bin 3)	(2) ln(# of HH at Bin 4)	(3) ln(# of HH at Bin 5)	(4) ln(# of HH at Bin 6)
t-3	-0.00344 (0.00287)	0.00036 (0.00265)	-0.00811*** (0.00093)	0.01273 (0.00707)
t-2	-0.00780 (0.00466)	-0.00663 (0.00442)	-0.00949** (0.00367)	-0.00102 (0.01287)
t-1	-0.00058 (0.00465)	0.00185 (0.00490)	0.00389 (0.00411)	0.02028 (0.01045)
t	-0.00509 (0.00365)	-0.00377 (0.00393)	-0.00506 (0.00374)	0.01151 (0.00852)
t+1	-0.01301* (0.00644)	-0.01133 (0.00712)	-0.01087 (0.00563)	-0.00321 (0.01793)
t+2	-0.02918*** (0.00377)	-0.02729*** (0.00673)	-0.03007* (0.01314)	-0.06244*** (0.00623)
t+3	-0.01727 (0.00875)	-0.01629 (0.01195)	-0.01466 (0.02187)	0.01142 (0.03100)
Zip + Year Fixed Effect	Yes	Yes	Yes	Yes
Cluster Std. Error	Zip + Year	Zip + Year	Zip + Year	Zip + Year





References

- Bornstein, G., & Indarte, S. (2022). The impact of social insurance on household debt. *Available at SSRN 4205719.*